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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/742,428	12/22/2000	Naoki Kachi	040679/1191	8035

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EXAMINER

LEUNG, JENNIFER A

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 12/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/742,428

Applicant(s)

KACHI ET AL.

Examiner

Jennifer A. Leung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24, 30, 37 and 40-49 is/are pending in the application.
- 4a) Of the above claim(s) 1-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30, 37 and 40-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-24, 30, 37 and 40-49 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment submitted on September 28, 2006 has been received and carefully considered. Claims 1-24 are withdrawn from consideration. Claims 25-29, 31-36, 38 and 39 are cancelled. Claims 30, 37 and 40-49 are under consideration.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 30, 37, 40, 41, 43, 45, 46 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noda et al. (EP 0 782 880) in view of Kirby (US 5,593,647).

Regarding claims 30, 37, 40 and 45, Noda et al. discloses a catalytic converter comprising a carrier (i.e., a monolithic carrier; page 6, line 54 to page 7, line 48); and a layered structure (i.e., a catalyst-adsorbent layer) disposed on the carrier, the layered structure including: a HC trap layer disposed on the carrier (i.e., an adsorbent comprising a zeolite; page 5, line 13 to page 6, line 43); and a catalyst system disposed on the HC trap layer (page 3, line 43 to page 5, line 8).

In particular, the catalyst system may comprise a multilayered catalyst system (see page 9, line 54 to page 10, line 6, wherein the carrier is coated with first, second and third layers) including, a first catalyst layer (i.e., the "Second layer" in Examples 14, 16, 17, 20, 83, 88, 93, 98 and Comparative Example 1 in Tables 4, 5 and 8-10) disposed on the HC trap layer (i.e., the "First layer" in said Examples); and a second catalyst layer (i.e., the "Third layer" in said Examples) disposed on said first

catalyst layer on the HC trap layer;

wherein the first and second catalyst layers (i.e., the “Second layer” and “Third layer”) form a dual-layered catalyst system disposed on the HC trap layer such that HC released from the trap layer is purified by both the first and second catalyst layers (i.e., the construction would be similar to that illustrated in Fig. 1(E)); wherein the first and second catalyst layers comprise noble metals, respectively (e.g., Pt, Pd and Rh are used in said Examples; see also page 3, lines 43-46); and wherein the weight per volume of noble metal present in the second catalyst layer (i.e., the “Third layer”) is greater than the weight per volume of noble metal present in the first catalyst layer (i.e., the “Second layer”), and hence, the second catalyst layer is inherently controlled to be active earlier than the catalyst noble metal present in the first catalyst layer. (In each instance of said Examples, the noble metal loading (g/ft³) for the “Third layer” is greater than the noble metal loading for the “Second layer”). It would have been obvious for one of ordinary skill in the art at the time the invention was made to select one of the above Examples for a catalytic converter in the apparatus of Noda et al., on the basis of suitability for the intended use and absent showing any unexpected results thereof, in order to obtain a desired degree of purification for a given exhaust stream.

With respect to the washcoat present in each catalyst layer, the specific amount of washcoat is not considered to confer patentability to the claim because the specific amount of washcoat in each catalyst layer would have been considered a result effective variable by one having ordinary skill in the art. Accordingly, it would have been obvious for one of ordinary skill in the art at the time the invention was made to routinely optimize the amount of washcoat in each catalyst layer to obtain the desired exhaust purification thereof, *In re Boesch*, 617 F.2d.

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272, 205 USPQ 215 (CCPA 1980), and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges merely involves routine skill in the art. *In re Aller*, 105 USPQ 233. This is further evidenced by Kirby, who teaches a first catalyst layer (i.e., an inner layer) and a second catalyst layer (i.e., an outer layer), wherein the amount of a second washcoat present in the second catalyst layer based on a unit volume of the carrier is smaller than an amount of a first washcoat present in the first catalyst layer based on the unit volume of the carrier (see FIGs. 2A-D, wherein the amount of washcoat present in the inner layer may be twice that present in the outer layer, or a 2-1 ratio; see also column 1, lines 63-67; column 3, lines 5-10 and column 3, line 45 to column 4, line 5). Kirby controls the amounts of washcoat within each catalyst layer to control the degree of purification achieved by the catalytic converter, as measured by the percent breakthrough of various exhaust components, including HC, CO and NO_x. As taught by Kirby, the provision of a smaller amount of washcoat on the second, or outer, catalyst layer relative to the first, or inner, catalyst layer achieves improved emission performance.

Regarding claims 41 and 46, as best understood, a mass ratio of the noble metal present in the second catalyst layer to that in the second washcoat is higher than a mass ratio of the catalyst noble metal present in the first catalyst layer to that in the first washcoat (see Tables 4, 5 and 8-10; see also page 9, line 55 to page 10, line 6).

Regarding claims 43 and 48, Noda et al. discloses that the first and second layers (i.e., the "Second layer" and the "Third layer" in the Examples) may each comprise promoters (e.g., cerium; see page 4, line 49 to page 5, line 12; Examples 17 and 20). The specific amount of promoter in each catalyst layer, however, is not considered to confer patentability to the claim

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because the specific amount of promoter in each catalyst layer would have been considered a result effective variable by one having ordinary skill in the art. Accordingly, it would have been obvious for one of ordinary skill in the art at the time the invention was made to routinely optimize the amount of promoter in each catalyst layer to obtain the desired exhaust purification thereof, *In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980), and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges merely involves routine skill in the art. *In re Aller*, 105 USPQ 233.

3. Claims 42 and 47 are rejected under 35 U.S.C. 103(a) as obvious over Noda et al. (EP 0 782 880) in view of Kirby (US 5,593,647), as applied to claims 30, 37, 40 and 45 above, and further in view of Wan (US 5,057,483).

Noda et al. discloses that the catalyst layers may comprise a noble metal such as Rh (see page 3, lines 43-47). Although the Examples cited above do not specifically include an embodiment wherein the second catalyst layer (i.e., the "Third layer") comprises rhodium, disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). Also, a known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." *In re Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to configure the multilayered catalyst system of Noda et al. to comprise rhodium in the second catalyst layer, in order to obtain a desired exhaust purification performance, because the use of rhodium in the second layer of a dual layered catalyst system is conventionally known in the art of exhaust gas purification. Wan

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further evidences that the use of multilayered catalyst systems having a rhodium component in the outermost layer (i.e., the second coat; column 8, line 35 to column 11, line 35).

4. Claims 44 and 49 are rejected under 35 U.S.C. 103(a) as obvious over Noda et al. (EP 0 782 880) in view of Kirby (US 5,593,647), as applied to claims 30 and 37 above, and further in view of Patil et al. (US 5,125,231).

Noda et al. discloses that the honeycomb structure is preferably coated with a heat-resistant metal-oxide on the partition walls and the pore surfaces, i.e., a base coat layer (see page 7, lines 22-23). Although Noda et al. does not state the particular coating material to be selected, it would have been obvious for one of ordinary skill in the art at the time the invention was made to select one of alumina and silica as a main component for the basecoat in the apparatus of Noda et al., on the basis of suitability for the intended use thereof, because alumina and silica are conventionally known the art as suitable materials for forming coatings on catalyst carriers. It is further well known that alumina enables a high specific surface area on carriers for the subsequent coating of catalysts, etc., as evidenced by Patil et al. (see column 5, lines 9-46).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may

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be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 30, 37 and 40-49 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 6,503,862 in view of Ishii et al. (EP 918 145), Frestad et al. (US 4,975,406), and Kirby (US 5,593,647).

U.S. '862 claims a catalytic converter comprising:

a carrier (i.e., "a monolithic support" in claim 1); and

a layered structure disposed on the carrier, the layered structure including:

a HC trap layer disposed on the carrier (i.e., "a second layer containing hydrocarbon adsorbent" in claim 1); and

a multilayered catalyst system disposed on the HC trap layer, said system comprising

a first catalyst layer disposed on the HC trap layer (i.e., a third layer containing a metal-based catalyst formed on the second layer" in claim 1), and

a second catalyst layer disposed on the second layer on the HC trap layer (i.e., "a fourth layer containing rhodium formed on the third layer" in claim 2);

wherein said first and second catalyst layers (i.e., the claimed third and fourth layers, respectively) comprise catalyst noble metals, respectively (i.e., see claims 2, 7, 8, 9).

U.S. '862 does not claim an amount of noble metal present in the second catalyst layer, per unit volume of carrier, being larger than an amount of noble metal present in the first catalyst layer, per unit volume of carrier.

The same comments with respect to Ishii et al. and Frestad et al. apply (see final Office Action mailed October 31, 2005).

In addition, the specific amount of washcoat is not considered to confer patentability to the claim because the specific amount of washcoat in each catalyst layer would have been considered a result effective variable by one having ordinary skill in the art. Accordingly, it would have been obvious for one of ordinary skill in the art at the time the invention was made to routinely optimize the amount of washcoat in each catalyst layer to obtain the desired exhaust purification thereof, *In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980), and it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges merely involves routine skill in the art. *In re Aller*, 105 USPQ 233. This is further evidenced by Kirby, who teaches a first catalyst layer (i.e., an inner layer) and a second catalyst layer (i.e., an outer layer), wherein the amount of a second washcoat present in the second catalyst layer based on a unit volume of the carrier is smaller than an amount of a first washcoat present in the first catalyst layer based on the unit volume of the carrier (see FIGs. 2A-D, wherein the amount of washcoat present in the inner layer may be twice that present in the outer layer, or a 2-1 ratio; see also column 1, lines 63-67; column 3, lines 5-10 and column 3, line 45 to column 4, line 5). Kirby controls the amounts of washcoat within each catalyst layer to control the degree of purification achieved by the catalytic converter, as measured by the percent breakthrough of various exhaust components, including HC, CO and NOx. As taught by Kirby, the provision of a smaller amount of washcoat on the second, or outer, catalyst layer relative to the first, or inner, catalyst layer achieves improved emission performance.

Response to Arguments

6. Applicant's arguments filed September 28, 2006 have been fully considered but they are not persuasive. In general, Applicants argue that the particular amount of washcoat present in the various layers of the catalytic converter would not have been considered a result-effective variable to one having ordinary skill in the art at the time the invention was made. The Examiner respectfully disagrees, and has therefore cited the reference to Kirby (US 5,593,647) to further evidence her assertion. Kirby, for instance, presents various examples wherein the amount of washcoat present in a particular catalyst layer is varied (e.g., for mass ratios of washcoat at 1-1, 2-1 or 1-2, inner layer-to-outer layer; see the examples presented in FIGs. 2A-D), in order to achieve the desired level of emissions purification (i.e., as measured by the % breakthrough of HC, CO and NO_x). Although the various Examples presented Noda et al. comprise an outer catalyst layer having a larger amount of washcoat than an inner catalyst layer (e.g., an amount of 0.9 g/cc of washcoat in the "Third layer" versus an amount of 0.06 g/cc of washcoat in the "Second layer"), this does not constitute a teaching away from other relative amounts of washcoat, since disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971); and a known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use. *In re Gurley*, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994)

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer A. Leung
December 5, 2006

